MERMAN, A.M., kandidat meditsinskikh nauk (Moskva); MIRONENKO, I.S., glavnyy vrach.

Gastric sarcoma in a 15-year-old girl. Vest.rent.i rad. no.3:86-87 My-Je '53. (MLRA 6:8)

1. Poliklinika imeni Dzerzhinskogo. (Stomach--Tumors)

MERMAN, A.M., kandidat meditsinskikh nauk

Septic (metastatic) pneumonias following labor and abortions. Vest. rent. i rad. no.5:68-72 S-O '54. (MIRA 7:12)

1. Iz rentgenologicheskogo kabineta (zav. kandidat meditsinskikh nauk A.M.Merman) i septicheskogo otdeleniya (zav. dotsent S.B. Rafal'kes) rodil'nogo doma No.3 (glavnyy vrach V.M.Dashunina)

(PNEUMONIA
metastatic, after labor & abortion)
(ABORTION, complications,
pneumonia, metastatic)
(PUERPERIUM, complications,
pneumonia, metastatic)

MERMAN, A.M., kand.med.nauk

Leiomyosarcoma of the duodenum. Vest. rent. i rad. 35 no. 5:76-77 S-O '60. (MIRA 13:12)

1. Iz Gorodskoy klinicheskoy bol'nitsy No. 60 (glavnyy vrach M.I. Kamnev).

(DUODENUM--TUMORS)

MERMAN, A.M. (Moskva)

Close-focus X-ray therapy of skin tumors. Trudy TSentr. nauch.-issl. inst. rentg. i rad. 11 no.1:252-259 '64.
(MIRA 18:11)

MERMAN, G.A.

"New Class of Periodic Solutions in the Limited Hill Problem,"

Trudy In-ta teor. astr., No 1, 1952 (Works of the Inst. of Theoretical Astronomy).

1. HERMAN, G. A.

2. USSR (600)

4. Moon, Theory of

7. Convergence radius of Hill's series. Biul. Inst. teor. astron. 5, No. 4, 1952.

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

MERMAN, G. A.

USSR/Astronomy - Three-Body Problem 1 Aug 52

"A Criterion Governing the Realizability of Hyperbolico-Elliptic Motion in the Three-Body Problem" G.A. Merman, Inst of Theoretical Astr, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol 85, No 4, pp 727-730

Elaborates a criterion similar to the criterion given in the works of G.F. Khil'mi in "Dok Ak Nauk SSSR" Vol 78, No 4, 1951; "Problem of n Bodies in Celestial Mechanics and Cosmogony," 1951, which criterion suggests a radial velocity so large that for a given total energy of the system the relative motion of the masses m_0 and m_1 will be elliptical. Author states he weakens somewhat some of limitations imposed on the radical velocity. Submitted by Acad O. Yu. Shmidt 1 Apr 52.

227T36

MERMAN, G.A.

24 C

USSR.

Merman, G. A. On sufficient conditions for capture in the restricted hyperbolic problem of three bodies with close double approaches. Akad. Nauk SSSR. Byull. Inst. Teoret. Astr. 5, 325-372 (1953). (Russian)

Given three particles P_0, P_1, P_2 subject to their mutual attractions we say that a capture takes place among two of them if (i) the distance between these two particles remains finite as $t \to \infty$ while the other two distances increase without any bounds (hyperbolic-elliptic motion), and (ii) all mutual distances between the three particles increase indefinitely as $t \to -\infty$ (hyperbolic motion). O. Yu. Šmidt [Doklady Akad. Nauk SSSR (N.S.) 58, 213-216 (1947)] gave the first numerical example illustrating the possibility of a capture in the general problem of three bodies (assuming that $m_0 = m_1 = m_2 = 1$) for $h > 0$, h being the constant of energy. In his example the osculating orbit of P_1 with respect to P_0 changed from hyperbolic to elliptic while the orbit of the third particle P_2 remained hyperbolic during all the motion.

1 - F/W

1/4

BC

MERMAN, G.A.

Afterwards Hil'mi [The problem of n bodies in celestial mechanics and cosmogony, Izdat. Akad. Nauk SSSR, Moscow, 1951] established two criteria in the form of inequalities for the n-body problem; the fulfilment of one of them guarantees the preservation of the hyperbolic-elliptic nature of motion as $t\to+\infty$ while that of the other guarantees the preservation of the hyperbolic nature of motion as $t\to-\infty$. Though these criteria are simple and convenient for applications, applied to the example of Šmidt they require numerical integration over a large time interval; namely, the corresponding inequalities of the two criteria are satisfied only for $t=-129764$ and $t=8000$.

Making use of Hil'mi's method the author has derived a great number of criteria, more or less convenient in various cases, sufficient for hyperbolic-elliptic motion and hyperbolic motion in the restricted hyperbolic problem of three bodies (the mass m_0 of P_0 is supposed to be zero). These new criteria have considerably shortened the interval of numerical integration in comparison with the interval in the example of Šmidt-Hil'mi.

1 - F/W

2/4

MERMAN, G. A.

1 - F/W

3/4

In applying the Hil'mi criteria to the ends of an approximate trajectory obtained by numerical integration one needs (i) to estimate the error committed over the interval of integration, and (ii) to show that to within this error the criteria of Hil'mi still hold at the endpoints of the trajectory. Finally, the domain of the initial data leading up to a capture is to be determined, or, in other words, the sufficient conditions for capture have to be found. Since $m_0 = 0$ the particle P_0 moves in a hyperbola with respect to P_2 and the error

OVER

has to be estimated only for P_e. Replacing the actual hyperbolic motion by an approximate one in which P_s moves uniformly and rectilinearly with respect to the center of gravity of P_s and P_t, the author has solved the problem by use of the previously mentioned method of Hill'mi.

In addition to the sufficient criteria, several necessary criteria for a capture are also given. These last criteria show one common feature, namely, that a capture can take place only in the case of a close approach of P_s and P_t. Finally, sufficient conditions for the exact hyperbolic case are formulated and a procedure is given for their practical applications.

E. Leimanis (Vancouver, B. C.).

1 - F/W

MERMAN, G. A.

Mathematical Reviews
Vol. 15 No. 4
Apr. 1954
Astronomy

(3)

Merman, G. A. New criteria of hyperbolic and hyperbolic-elliptic motion in the problem of three bodies. Akad. Nauk SSSR. Astr. Žurnal 30, 332–339 (1953). (Russian)

This paper is a continuation of an earlier paper by the same author [Doklady Akad. Nauk SSSR (N.S.) 85, 727–730 (1952); these Rev. 14, 590]. New criteria of realizability of hyperbolic and hyperbolic-elliptic motion in the problem of three bodies are established. It is pointed out that they can be regarded as an improvement of the criteria obtained previously by the author (loc. cit.) and G. F. Hil'mi [The problem of n bodies in mechanics and cosmogony, Izdat. Akad. Nauk SSSR, Moscow, 1951] in the sense that the restrictions imposed in these papers on the radial velocities of the bodies and their initial configuration are removed. Instead it is required that the corresponding full velocities be sufficiently large. The new criteria are too lengthy to be reproduced here. They are applied to the example given by O. Yu. Šmidt [Doklady Akad. Nauk SSSR (N.S.) 58, 213–216 (1947)] of illustrating the possibility of a capture in the problem of three bodies. *E. Leimanis.*

Inst-Theoretical Astronomy, AS USSR

[illegible]

"Problem of Chazy analysis of the problem of three bodies"
Byull. Inst. Teor. Astronomii, AN SSSR, [illegible], [illegible], [illegible], [illegible]

In 1922 Chazy (J. Chazy, J. Math. Pures et Appl. [illegible]) concluded that at a constant energy [illegible] [illegible]. Author considers Chazy [illegible] [illegible] demonstrations of Chazy's theorems. [illegible]

[illegible]

MERMAN, G.A.

USSR

Merman, G. A. The restricted parabolic problem of three bodies. Byull. Inst. Teoret. Astr. 5, 606-616 (1954). (Russian)

J-F/W

MS

Consider the motion of three particles P_0, P_1, P_2 subject to their mutual attractions according to the Newtonian law, except that P_0 of mass $m_0=0$ does not disturb the motion of the finite particles P_1 and P_2 whose relative orbit is a parabola. J. Chazy [Ann. Sci. Ecole Norm. Sup. (3) 39, 29-130 (1922)] showed that in the general three-body problem for $h=0$ (h being the constant of energy) hyperbolic-elliptic motions (one of the three mutual distances remains bounded while the other two distances increase indefinitely as $t\to\infty$ and are of the same order of magnitude as t) or parabolic motions (all three mutual distances increase indefinitely as $t\to\infty$ and are of the order of magnitude $t^{2/3}$) are possible but parabolic-hyperbolic and parabolic-elliptic motions are impossible. From this it follows that in the general three-body problem for $h=0$ the probability of a capture is zero.

Since on the one hand the restricted parabolic problem of three bodies is the limiting case of the general three-body problem for $h=0$ when one of the three masses approaches zero, a capture in this case seems impossible. On the other

(OVER)

G.A. MERMAN

hand, however, the restricted parabolic problem can be considered as the limiting case of parabolic-hyperbolic (for $h>0$) or parabolic-elliptic motion (for $h<0$) as the mass of the body describing a hyperbola ($h>0$) or an ellipse ($h<0$) approaches zero. These two limiting cases show the possibility of occurrence of parabolic-hyperbolic or parabolic-elliptic motions in the restricted parabolic problem, these two types of motion being impossible in the general three-body problem for $h=0$. Hence capture in the restricted parabolic problem of three bodies in general is possible.

It is shown in the paper that all the types of motion mentioned above in the restricted parabolic problem are possible if certain criteria which are too detailed to be reproduced here are satisfied. The restricted parabolic problem has many features in common with the restricted hyperbolic problem considered previously by the author [same Bull. 5, 325–372 (1953); MR 16, 293]. *E. Leimanis.*

I-F/W

Merman, G. A. On sufficient conditions for capture in the three-body problem. Dokl. Akad. Nauk SSSR (N.S.) 99, 925–927 (1954). (Russian)

In a series of papers O. Yu. Smidt [same Dokl. (N.S.) 58, 213–216 (1947)], O. A. Sizova [ibid. 86, 485–488 (1952); MR 14, 589], K. A. Sitnikov [Mat. Sb. N.S. 32(74), 693–705 (1953); MR 15, 356], G. A. Merman [Byull. Inst. Teoret. Astr. 5, 373–391 (1953); MR 16, 293], G. E. Hrapovickaya [ibid. 5, 435–444 (1953); MR 16, 294] constructed examples of capture in the restricted and the general three-body problem, making use of numerical integration as well as of the criteria established by Hil'mi [The problem of n bodies in celestial mechanics and cosmogony, Izdat. Akad. Nauk SSSR, Moscow, 1951] and Merman [Byull. Inst. Teoret. Astr. 5, 325–372 (1953); MR 16, 293]. In addition, Merman [last paper cited] succeeded in giving sufficient conditions for capture in the restricted hyperbolic problem of three bodies. In the present paper these results are extended to the general three-body problem. The author claims that in the example given by Smidt (cited above) his sufficient conditions for a capture are satisfied.

E. Leimanis (Vancouver, B. C.).

Inst. Theoretical Astronomy, AS USSR

MERMAN, G A

2

1-FW

Merman, G. A. On a theorem of Birkhoff. Byull. Inst. Teoret. Astr. 6 (1955), 232–239. (Russian)

The author reformulates more precisely and proves two theorems of G. D. Birkhoff [Dynamical systems, Amer. Math. Soc. Colloq. Publ., vol. 9, New York, 1927, p. 282], namely, that in the problem of three bodies for $h<0$ (h being the energy constant) the motions are (i) of hyperbolic-elliptic type and (ii) of hyperbolic-elliptic type and of the same class, both for $t\to+\infty$ as well as for $t\to-\infty$. He also gives criteria which guarantee the realization of motions of the considered types and proves a corollary of another theorem of Birkhoff (last theorem on p. 276 of the same book) to the effect that the ratio of the largest to the smallest of the mutual distances can be made arbitrarily large throughout the motion by giving a sufficiently large value to Birkhoff's constant K [cf. also Merman, same Byull. 5 (1954), 594–605; MR 17, 905].

E. Leimanis (Vancouver, B.C.)

MT

MERMAN, G.A.

New criterion of the hyperbolic motion in the problem of three bodies. Biul.Inst.teor.astron. 6 no.2:69-72 '55. (MIRA 13:3)

(Problem of three bodies)

MERMAN, G.A.

Hyperbolic approaching in the problem of three bodies.
Biul.Inst.teor.astron. 6 no.2:73-84 '55. (MIRA 13:3)
(Problem of three bodies)

MERMAN, G.A.; KOCHINA, N.G.

Applying the method of evaluations to O.IU.Shmidt's example. Biul.Inst.teor.astron. 6 no.2:85-111 '55. (MIRA 13:3)

(Problem of three bodies)

MERMAN, G. A.

124-1957-1-26

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 1, p 4 (USSR)

AUTHOR: Merman, G. A.

TITLE: On one of Birkhoff's Theorems (Ob odnoy teoreme Birkgofa)

PERIODICAL: Byul. In-ta teor. astron. AN SSSR, 1956, Vol 6, Nr 4, pp 232-239

ABSTRACT: It is shown that some of Birkhoff's theorems relating to problems of the qualitative theory of motion of three bodies, examined in his book "Dynamic Systems", must be stated more specifically and require additional clarification. A detailed proof is given of two of Birkhoff's theorems concerning the problems of capture, and proof is offered for one corollary derived from Birkhoff's theorems which is of value for the qualitative theory of the problem.

G. N. Duboshin

1. Mathematics 2. Books--Review

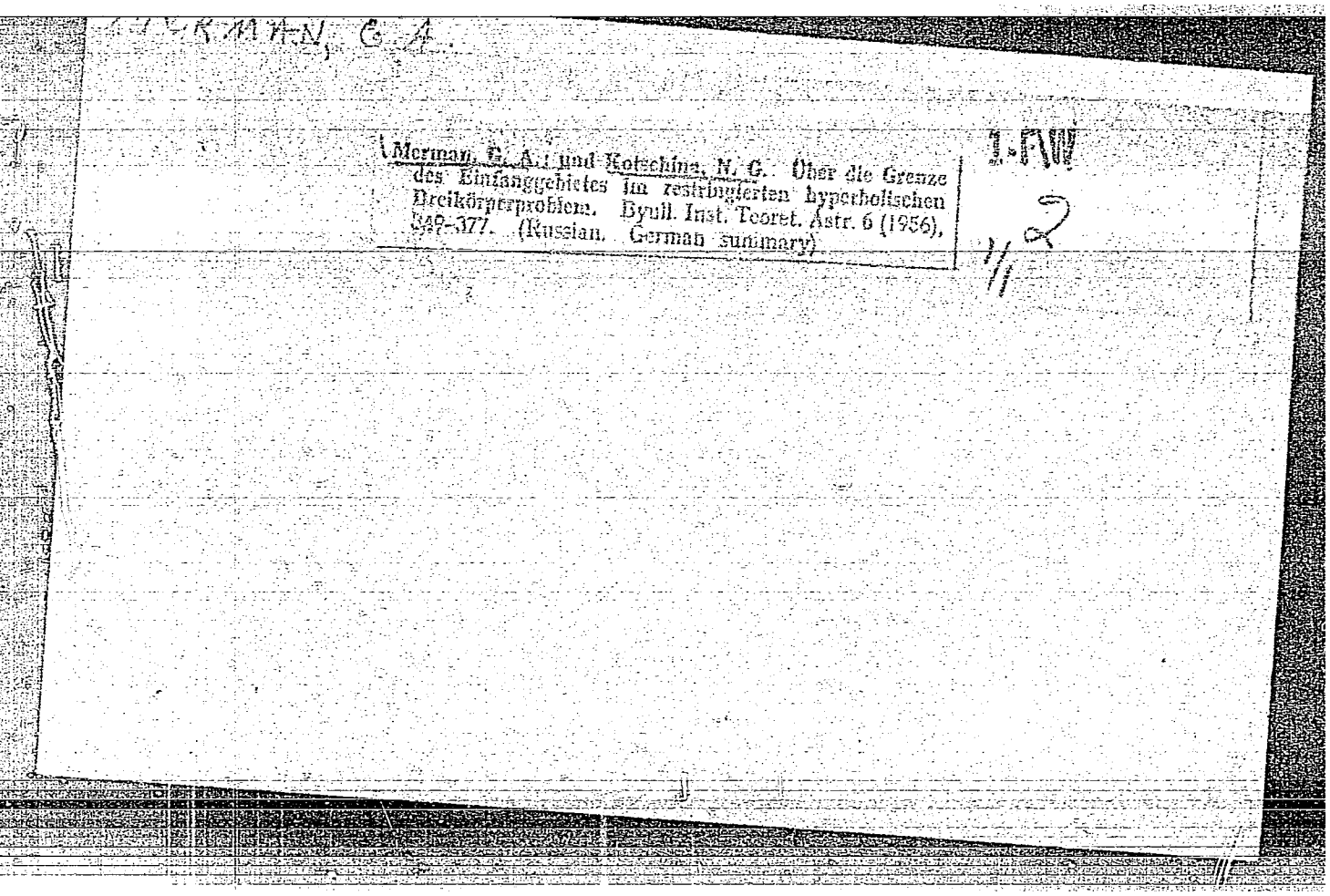
Card 1/1

MERMAN, G. A

"Concerning One Method of Approximation of the Solution of the n Body Problem in Natural Coordinates," by Yu. V. Vandakurov, by Ull. In-ta teor. astron. AN SSSR, Vol 6, No 4, 1956, pp 240-243 (from Referativnyy Zhurnal -- Mekhanika, No 1, Jan 57, Abstract No 27, by G. A. Merman)

"Proposes a method of approximate integration of equations of celestial mechanics under the condition that the solution of the two body problem is substituted into pertubation functions and that only the first stage deviations of perturbed motion from the unperturbed are considered. The newness consists in the use of natural coordinates." (U)

Sum. 1345



FERMAN, G. A.

Merman, G. A., und Kotschina, N. G. Über die Grenze des Einfanggebietes im restringierten hyperbolischen Dreikörperproblem. Byull. Inst. Teoret. Astr. 6 (1956), 349–377. (Russian. German summary)

1-NW

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MERMAN, G. A.

2
1-FW

Merman, G. A. Zu Arbeiten von R. Vernić über die Regularisierung und die periodischen Lösungen des Dreikörperproblems. Byull. Inst. Teoret. Astr. 6 (1956), 408–415. (Russian. German summary)

Vernić [Diskussion der Sundmanschen Lösung des Dreikörperproblems, Jugoslav. Akad. Znan. Umjet., Zagreb, 1954; MR 16, 867] claims (loc. cit. p. 86, Theorem 5) to have obtained transformations for the independent variable t which regularize all types of collisions in the general three-body problem. The author shows that Vernić's proof is defective and that, whereas his theorem holds for all binary collisions and for real triple collisions in the case of the Lagrangian motions and in the case of other motions for certain values of the masses, it does not hold for all real triple collisions, and it does not hold for any imaginary triple collision.

Another theorem of Vernić [Hrvatsko Prirod. Društvo. Galsnik Mat. Fiz. Astr. Ser. II. 8 (1953), 247–266; MR 16, 181] on the non-existence of periodic solutions other than the Lagrangian solutions in the general three-body problem is also shown to be false.

The reviewer would like to point out that in the last differential equation on p. 409 the factor $1/R^3$ is lacking in the first term on the right-hand side. *E. Leimanis.*

1/1

CW

SOV/124-59-7-7186

Translation from: Referativnyy zhurnal, Mekhanika, 1959, Nr 7, p 10 (USSR)

AUTHOR: Merman, G.A.

TITLE: Qualitative Investigations in the Three-Body Problem

PERIODICAL: Byul. In-ta teor. astron. AS USSR, 1958, Vol 6, Nr 10, pp 687 - 712 (Res. French)

ABSTRACT: The final motions in the three-body problem are studied qualitatively for negative values of the constant energy. The conditions are presented, which ensure the analyzing of the motion of three bodies into two motions, which are nearly independent and close to Kepler motion. The author shows that the mimimum distance of the remote body does not change essentially, so that further close approaches of this body to the other two bodies are not possible, which could sharply change the entire motion configuration. The limits, within which the velocity of the third body varies both in magnitude and direction, are also near the elliptic Kepler values. The distance between the two nearest bodies remains always limited, so that some kind of a partial Lagrange stability takes place. As

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SOV/124-59-7-7186

Qualitative Investigations in the Three-Body Problem

an example of applying the criteria of decomposition of motion into two approximate Kepler motions in the three-body problem, the author analyzes the problem of motions of the Sun, Mercury, and Pluto (the author neglects here all the rest perturbations from the other planets). The author shows that Mercury never will move away from the Sun farther than four astronomical units, and Pluto will never approach the Sun closer than 11.2 astronomical units. The study represents a considerable supplement to the classical works of Shazi on the qualitative theory of the three-body problem

G.N. Duboshin

Card 2/2

80852

16.3400, 3.1400 SOV/124-59-8-8383

Translation from: Referativnyy zhurnal, Mekhanika, 1959, Nr 8, p 8 (USSR)

AUTHOR: Merman, G.A.

TITLE: On the Presentation of the General Solution of the Three-Body Problem by Convergent Series

PERIODICAL: Byul. In-ta teor. astron. AS USSR, 1958, Vol 6, Nr 10, pp 713-732 (French. Res.)

ABSTRACT: It is known that the general solution of the three-body problem presented by Sundman (K.P. Sundman, Acta Math., 1913, Vol 36) in the form of absolutely convergent infinite series can not be applied in practice, as it was shown by Belorizky (M.D. Belorizky, Recherches sur l'application protique des solutions général du probleme des trois corps. J.O., 1933, Vol 16, Marseille) because the series in question converge extremely slow. The author determines in his study the possibility of presenting the general solution of the three-body problem by convergent series of polynomials and, moreover, of quantitative rating the error caused by the replacement of the rigorous solution by polynomials of a

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On the Presentation of the General Solution of the Three-Body Problem

certain finitedegree. The author discusses at first some general theorems of the theory of differential equations, of which the most important theorem for applying to the three-body problem is the following Theorem 5. Let a system of m differential equations be given:

$$\frac{dy_i}{dx} = P_i(y_1, \ldots, y_m) \qquad (i = 1, \ldots, m)$$

where P_i are polynomials of k_i-th degree of m_i variables with constant coefficients:

$$P_i(y_{r_1}, \ldots, y_{r_{s_i}}) = l_{r_1} + \ldots \sum_{+}^{k_i} l_{r_{s_i}=0} \varkappa a_i(l_{r_1}, \ldots, l_{r_{s_i}}) y_{r_1}^{l_{r_1}} \ldots y_{r_{s_i}}^{l_{r_{s_i}}} \quad (i = 1, \ldots, m)$$

and the initial conditions are given

$$y_i = y_i^{(o)} \quad \text{for } x = 0 \quad (i = 1, \ldots, m).$$

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On the Presentation of the General Solution of the Three-Body Problem

Let be known also that the solution of the given system

$$Y_i(x),\ Y_i(0) = y_i^{(o)} \qquad (i = 1, \ldots, m)$$

exists and is limited for all real x by the same number C

$$Y_i(x) \leq C \qquad (i = 1, \ldots, m)$$

Let $x > 0$ be an arbitrary real number, $\varepsilon > 0$ be an arbitrary small number, and n be a natural number satisfying the inequality

$$n \geq \frac{M_i(\varepsilon)}{\varepsilon} \left[e^{L_i(s)\,x} - 1\right] x$$

where

$$M_i(\varepsilon) = M_i = a_i \left[\frac{(C + \Delta)^{k_i + 1} - 1}{C + \Delta - 1}\right]^{m_i}$$

$$L_i(\varepsilon) = L_i = m_i\, k_i\, a_i \left[\frac{(C + \Delta)^{k_i + 1}}{C + \Delta - 1}\right]^{m_i}$$

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On the Presentation of the General Solution of the Three-Body Problem

$$a_i = \max_{1_{r_1}+\ldots+1_{r_{s_i}}=0}^{k_i} \left\{ \left| a_i(1_{r_1}, \ldots, 1_{r_{s_i}}) \right| \right\}, \quad \Delta = \max_{i=1}^{m} \Delta_i$$

$$\Delta_i = \varepsilon + \frac{\varepsilon}{e^{m_i k_i a_i \varkappa} \left| \frac{C^{k_i} - 1}{C - 1} \right|^{m_i} - 1}$$

$y_i^{(n)} = y_i^{(n)}(\varkappa) = y_i^{(n)}(\varkappa; y_1^{(o)}, \ldots, y_m^{(o)})$ $(i = 1, \ldots, m)$ - are polynomials determined by the recurrent correlations

$$y_i^{(\alpha+1)} = y_i^{(\alpha)} + \frac{\varkappa}{n} P_i(y_{r_1}^{(\alpha)}, \ldots, y_{r_{s_i}}^{(\alpha)})$$

$$\left(\begin{matrix} i = 1, \ldots, m \\ \alpha = 0, 1, \ldots, m-1 \end{matrix} \right)$$

Then the inequality is valid:

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On the Presentation of the General Solution of the Three-Body Problem

$$\left| y_i^{(n)}(\chi) - Y_i(\chi) \right| \leq \varepsilon \quad (i = 1, \ldots, m)$$

Proceeding thereupon to the three-body problem, the author reduces the equations of this problem to a form suitable for applying Theorem 5. This is attained by introducing certain new dependent variables and a new independent variable - the Sundman-variable instead of time. Thereupon, the author formulates the basic theorem, the proof of which is reduced to the verification of fulfilment of the conditions of Theorem 5. Moreover, the author gives some critical remarks in connection with the study of Vernich, which have polemic nature.

G.N. Duboshin

Card 5/5

SOV/35-59-9-6850

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1959, Nr 9, pp 2 - 3 (USSR)

AUTHOR: Merman, G.A.

TITLE: An Outline of the Mathematical Studies of Mikhail Fedorovich Subbotin (on the 65th Anniversary of His Birthday)

PERIODICAL: Byul. in-ta teor. astron. AS USSR, 1959, Vol 7, Nr 3, pp 233 - 255

ABSTRACT: The field of scientific problems studied by M.F. Subbotin from 1916 was very wide, such as: algebra, differential equations, the theory of probability, law, applied and calculational mathematics, astrometry, the history of astronomy, the compilation of textbooks and popular articles. There is a detailed account of the main mathematical works by M.F. Subbotin. His early works "On the Form of Power Expansions of Algebraic Functions", and "On Particular Singularities of Some Differential Equations" are devoted to the theory of functions: the first describes the criterion that the function, represented by Taylor's series, is non-algebraic; the second is a criterion that the function given in the form of a differential equation is not holomorphic function. To these works is added the one -

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SOV/35-59-9-6850

An Outline of the Mathematical Studies of Mikhail Fedorovich Subbotin (on the 65th Anniversary of His Birthday)

"On the Extremal Properties of Entire Functions of Finite Orders" (1930). In the work "On the Law of the Distribution of Errors" a generalized law of the distribution of errors is derived whose particular case is Gaussian normal law of distribution. The new law of distribution was used in order to determine the period of the Sun's rotation around the axis from observations of the sunspots in Greenwich during 1886 - 1909. From works which apply to celestial mechanics, the works concerning the improvement of the convergence of trigonometric series, are singled out, as well as the work on the introduction of a new anomaly, comprising as particular cases the eccentric, true and tangential anomaly, as well as the work on a new form of Euler-Lambert equation. In articles "On the Problem of Two Bodies With Variable Masses" and "On Certain Properties of Motion in the Problem of η Bodies". Subbotin approaches the solution of the problem by proceeding from problems of the qualitative celestial mechanics. A series of works has a preeminently applied nature. They are dedicated to the calculation of secular inequalities, to the calculation of the coordinates of planets by the quadrature method, to the determination of orbital elements by the method of the variation of geocentric distances the numerical integration of differential equations and others. A full bibliography of the scientific studies of M.F. Subbotin is adjoined, which contains 74 titles.

Card 2/2

N.S. Yakhontova

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S/618/61/000/008/001/001
A001/A101

24.4100 (1080, 1132, 1327)

AUTHOR: Merman, G.A.

TITLE: Almost-periodic solutions and divergence of the Lindstedt and Birkhoff series in the restricted three-body problem

SOURCE: Akademiya nauk SSSR. Institut teoreticheskoy astronomii. Trudy no. 3, 1961, 5 - 134

TEXT: The present work has two main purposes: first, to prove the existence of almost-periodic solutions in the plane restricted three-body problem, and second, to demonstrate, for the same problem, the divergence of some formal trigonometric series called by the author Lindstedt and Birkhoff series. The solutions of both of these problems follow from the same circumstance: existence of a compact set of periodic solutions with purely imaginary characteristic indices, whose periods are multiple of the periods of the known Schwarzschild solutions.
In the introduction the author presents the contemporary definition of an almost-periodic function as given by Levitan (1953) and describes in some length the history of development of the theory of almost-periodic functions, mentioning in

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X

this connection the names of Poincaré, Krylov, Bogolyubov, Van der Pohl, Malkin, etc. He shows that the results obtained by the latter investigators in the theory of non-linear oscillations are not valid for conservative systems, a particular case of which is the system of points mutually attracting each other according to Newton's law. On the other hand, the theorem of Birkhoff (1941) on the existence of almost-periodic solutions for a canonic system with one degree of freedom, was proved by him with insufficient mathematical rigor and is not applicable generally for the problem in question. Some defects in his proof were discovered already in 1956 by Siegel. Therefore, at the present time no general rigorous methods of constructing almost-periodic solutions for conservative systems, in particular for the three-body problem, exist. Then the author presents his definitions of Lindstedt and Birkhoff series and mentions that the divergence of Lindstedt series was shown by Poincaré (1892-1899), although considerations of the latter do not hold for all cases. The author formulates the basic idea underlying the present investigation in the following way: Let some collineatory transformation be determined in a plane; let two invariant curves of this transformation be given, which do not pass through invariant points, one of which is closed and the other is an asymptotic branch. Then these curves can not intersect, since the intersection point must, on one hand, remain on the closed curve

Almost-periodic solutions ...

but, on the other hand, must, at a sufficiently great amount of iterations, recede from it to a finite distance along the asymptotic branch entering some invariant point lying outside the closed curve. The proof of divergence of Lindstedt and Birkhoff series is based on this principle.

The work consists of two chapters. In Chapter 1 (paragraphs 1-6), Birkhoff's theorems are reproduced from his work (1915, 1935, 1936) with necessary modifications and improvements, as result of which the existence of symmetric periodic orbits of Schwarzschild (1898) is proved. A classification of symmetric periodic solutions according to Birkhoff's two theorems is given.

Chapter 2 contains some new results. Paragraph 7 gives distribution of symmetric periodic orbits of elliptic and hyperbolic types, tabulated in Table 4 which shows the nature of direct and retrograde periodic orbits. Paragraph 8 describes the Birkhoff geometrical theorem on the existence of periodic solutions of the second kind. Since the proof given by Birkhoff (1941) himself contains some inaccuracies, the author presents detailed considerations leading to elimination of the original defects and proves 7 lemmas with all details and the final theorem of Birkhoff, following from them, which is formulated like this: "In any small vicinity, however small it may be, of every elliptic-type periodic solution of period ω with non-zero characteristic indices, non commensurable with

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Almost-periodic solutions ...

quantity $\frac{\omega}{2\pi}$, of the canonic system

$$\frac{dq}{dt} = \frac{\partial H}{\partial p}, \quad \frac{dp}{dt} = -\frac{\partial H}{\partial q}$$

(where function $H = H(t,p,q)$ is a periodic function of t with period ω and an analytic function of p,q in the given periodic solution), there exist other periodic solutions of periods $n\omega$, where n's are sufficiently great integers, unless function H satisfies some analytical relation in the given solution" Paragraph 9 discusses periodic orbits of Schwarzschild obtained in Chapter I and periodic orbits of the 2nd kind in vicinity of Schwarzschild's orbits, whose existence was proved in paragraph 8, in application to the plane restricted three-body problem. In paragraph 10 the existence of almost-periodic solutions in the plane restricted three-body problem is proved in detail, as a consequence of the existence of a compact set of elliptic-type periodic solutions of the 2nd kind, for which elliptic-type Schwarzschild solutions are solutions of the first kind. The proof is based on Poincaré's geometrical representation of solutions of the restricted three-body problem (1892 1899) and on the Birkhoff theorem which was merely outlined by him in his "Dynamical Systems" (1941). In paragraph 11 the author proves the divergence of Lindstedt series in the plane restricted three-body problem using Poincaré's representation of these series. The divergence of

Card 4/5

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S/618/61/000/008/001/001
A001/A101

Almost-periodic solutions ...

Birkhoff series for all μ-values (μ is a small parameter having the order of perturbing mass), with exception of a countable set of μ-values, is proved by the reductio ad absurdum method. The result obtained means more than merely divergence of Birkhoff series. The author proved the impossibility of existence of a continuum of closed invariant curves surrounding the given invariant point of elliptic type. The conclusion thereof is as follows: In a plane restricted three-body problem, invariant points of elliptic type are either unstable or are surrounded by a countable set of instability rings for all μ-values, with exception of a countable set of μ-values. There are 13 figures, 4 tables and 32 references, 12 of which are Soviet-bloc.

SUBMITTED: April 23, 1960

Card 5/5

L 31293-65 EWT(d)/EWT(1) IJP(c)
ACCESSION NR: AR5004793 S/0044/64/000/011/B038/B038

SOURCE: Ref. zh. Matematika, Abs. 11B178

17
B

AUTHOR: Merman, G. A.

TITLE: On the instability of the periodic solution of a canonical system with one degree of freedom in the case of the principal resonance

CITED SOURCE: Probn. dvizheniya iskusstv. nebesnykh tel, M., AN SSSR, 1963, 18-41

TOPIC TAGS: differential equation, stability, Lyapunov function

TRANSLATION: In the system

$$\frac{dx}{dt}=\frac{\partial H}{\partial y},\quad \frac{dy}{dt}=-\frac{\partial H}{\partial x} \qquad (1)$$

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L 31293-65
ACCESSION NR: AR5004793

$$H = \lambda/2\,(x^2+y^2)+F\,(t, x, y),\ F\,(t+\omega, x, y) \equiv F\,(t, x, y)$$

is a series in powers of x and y, starting with terms of third order of smallness and $\lambda\omega/\pi$ -- rational number. Under certain additional assumptions, principal among which is the assumption that there exists a "principal resonance" (this case will take place "as a rule" for the systems in question), the author investigates the qualitative picture of the behavior of the solutions in the vicinity of the point x = 0, y = 0; in particular, it is concluded that the solution x = 0, y = 0 is unstable in the sense of Lyapunov in the case in question. In the beginning of the article, a brief review is presented of the results of Siegel, Levi-Civita, Moser, and V. I. Arnold concerning the systems (1). V. Yakubovich.

SUB CODE: MA ENCL: 00

Card 2/2

MERMAN, G.A.

Asymptotic solutions of the canonical system with one degree of freedom for the case of zero characteristic indices. Biul. Inst. teor. astron. 9 no. 6:397-424 '64. (MIRA 17:9)

MERMAN, I.A., inzh.

Transportation of reinforced concrete poles. Energ. stroi. no. 3:92-93 (13), 1960 (MIRA 14:9)

1. Trest "Spetsset'stroy".
(Electric lines--Poles)
(Precast concrete---Transportation)

RABINOVICH, D.V., inzh.; LYASOTSKIY, S.V., inzh.; MERMAN, I.A., inzh.

Construction of 110 kv. electric transmission lines on reinforced concrete supports. Energetika 8 no.3:2-7 Mr '60. (MIRA 13:6)

(Electric lines--Poles)

KRYUCHKOV, V.A.; MERMAN, M.M.

Sanitary education of the population is to be raised to a level with present problems. Zdrav.Ros.Feder. 6 no.11:6-10 N '62. (MIRA 15:12)

(PUBLIC HEALTH--STUDY AND TEACHING)

MERMAN, N. V.

"A Meniscus Planet Telescope." Cand Phys-Math Sci, Main Astronomical Observatory, Acad Sci USSR, Leningrad, 1955.
(KL, No 9, Feb 55)

SO: Sum. No 631, 26 Aug 55-Survey of Scientific and Technical Dessertations Defended at USSR Higher Educational Institutions (14)

SOV/58-59-5-11579

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 5, p 238 (USSR)

AUTHOR: Merman, N.V.

TITLE: Planetary Meniscus Telescope

PERIODICAL: Izv. Gl. astr. observ. v Pulkove, 1958, Vol 20, Nr 6, pp 144 - 182 (Eng. résumé)

ABSTRACT: The author describes a planetary meniscus telescope planned for the Main Astronomical Observatory. This instrument will be 700 mm in diameter and have aperture ratios of 1:14, 1:20, 1:28, and 1:35 as a result of changeable correction optics. Reasons are given for the choice of design, size and aperture ratio. The author exposes the requirements made of the telescope, as well as the calculation method for the instrument's correction systems on the basis of the theory of aberrations of the third order. He provides all the design elements, aberrations, and tolerances for the manufacture of the planned telescope. The quality of the image that the described telescope will produce is compared with that of an equivalent refractor and reflector.

Card 1/1

A.V. Koroleva

3,1220

S/035/62/000/012/028/064
A001/A101

AUTHORS: Belorossova, T. S., Maksutov, D. D., Merman, N. V., Sosnina, M. A.

TITLE: Comparison of three types of mirror-lens systems; meniscus, Richter-Slevogt and Schmidt

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 12, 1962, 75, abstract 12A561 ("Izv. Gl. astron. observ. v Pulkove", 1961, v.22, no. 4, 114 - 122, English summary)

TEXT: The results of comparing three types of mirror-lens systems: meniscus, Richter-Slevogt and Schmidt, are presented. The comparison was conducted at a diameter of the entrance aperture D=1000 mm for three aperture ratios: 1:2; 1:3 and 1:4. The systems are achromatized and corrected for spherical aberration and coma. All investigated systems have been trigonometrically calculated in an exact way with the purpose of a rigorous study and comparison of aberrations caused by them. Adopted tolerances for aberration do not exceed 20 μ . The comparison method is described in detail. The tables and graphs show the results of comparison of the systems in respect to effective field of view, length of

Card 1/2

Comparison of three types of mirror-lens systems... S/035/62/000/012/028/064
A001/A101

instruments and difficulties of their manufacturing. There are 9 references.

G. Borodina

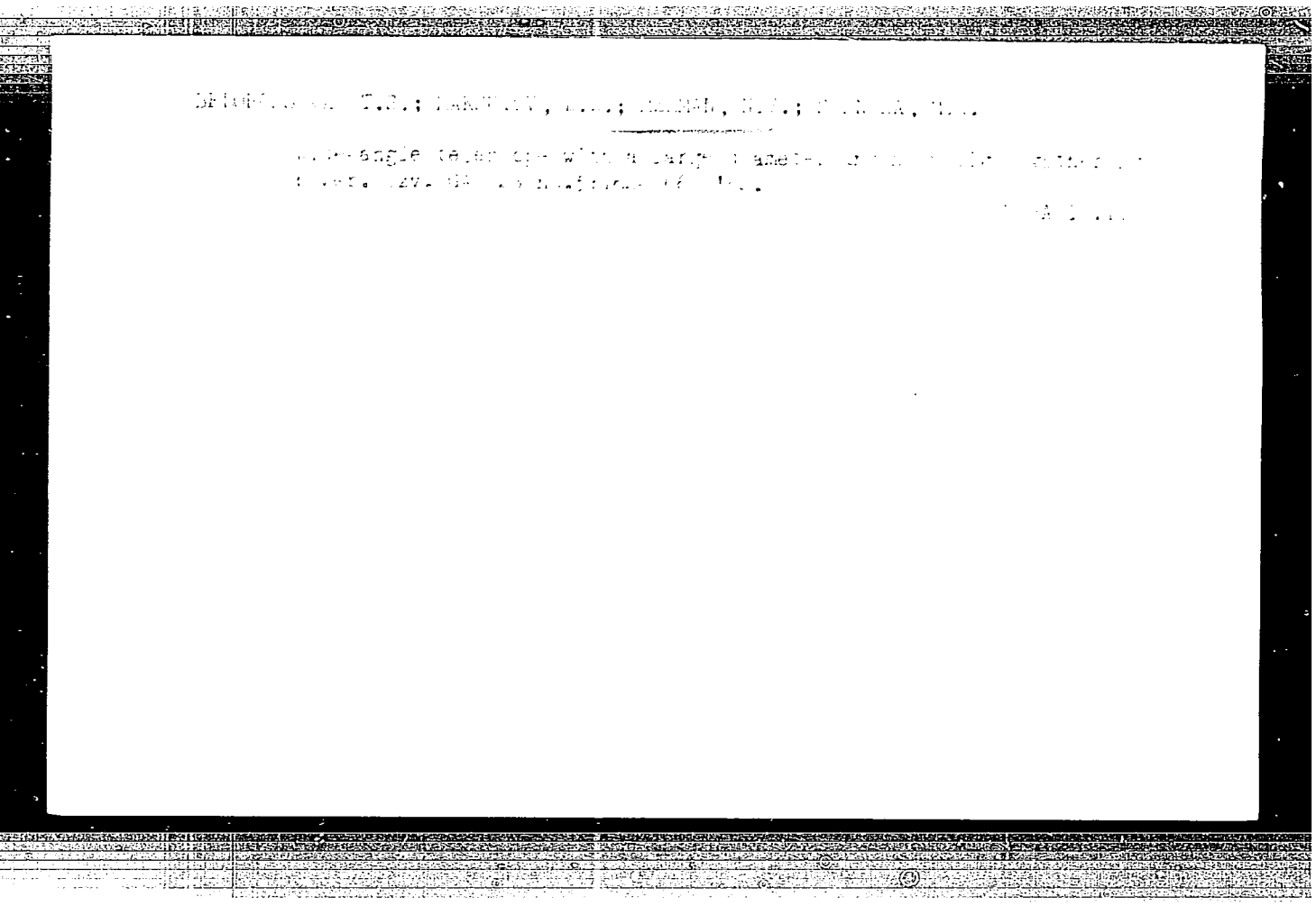
[Abstracter's note: Complete translations]

Card 2/2

BELOROSSOVA, T.S.; MERMAN, N.V.; SOSNINA, M.A.

A new mirror-lens objective. Astron.zhur. 39 no.2:330-334 Mr-Ap '62. (MIRA 15:3)

1. Glavnaya astronomicheskaya observatoriya AN SSSR.
(Lenses) (Telescope, Reflecting)



DIMKOVIC, D.; MERMEL, S.

Tuberculosis of the digestive tract. Acta chir. Iugosl. 8 no.4:321-329 '61.

1. Hirurska klinika (Nacelnik gen. prof. dr I. Papo) i Radioloski institut (Nacelnik puk. prof. dr M. Curcic) Vojnomedicinske akademije u Beogradu.

(TUBERCULOSIS GASTROINTESTINAL case reports)

BELKINA, G.L.; KUROYEDOV, V.A.; LAPOVOK, V.I.; LIKHTEROV, I.M.; MERMEL'SHTEYN, G.R.; OVCHARENKO, Ye.Ya.; PONOMAR', V.I.; SABAYEV, V.I.; SOTNIKOV, V.A.; FAYNBERG, L.I.; FEOKTISTOVA, N.D.

X-ray spectral analysis of brass in the process of smelting. Zav.lab. 31 no.4:427-428 '65.

(MIRA 18:12)

1. Konstruktorskoye byuro "TSvetmetavtomatika" i Artemovskiy zavod tsvetnykh metallov im. E.I.Kviringa.

MERMEL'SHTEYN, M.

Every hour is devoted to the cause of communism. Mashinostroitel' no.3:4-5 Mr '63. (MIRA 16:4)

1. Zamestitel' direktor Anzherskogo ordena Lenina mashinostroitel'nogo zavoda.
(Anzhero-Sudzhensk--Machinery industry)

MERMEL'SHTEYN, R.M.; PAVLOVA, M.Yu.

Problem of precocious physical and sexual development in girls. Vop.okh.mat. i det. 8 no.2:90 F'63. (MIRA 16:7)

1. Iz Zhitomirskogo oblastnogo kabineta gigiyeny i fizicheskogo razvitiya devochek pri 2-y Zhitomirskoy Gorodskoy bol'nitse.
(NO SUBJECT HEADINGS)

S/137/63/000/002/023/034
A006/A101

AUTHORS: Kontorovich, I. Ye., Mermel'shteyn, Yu. A.

TITLE: The effect of the grain size upon carbon diffusion in steel

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 2, 1963, 3, abstract 2I11 ("Sb. tr. Mosk. vech. metallurg. in-ta", 1962, no. 4, 48 - 52)

TEXT: The authors studied the behavior of C in 12 XH3A (12KhN3A) steel containing in %: C 0.15, Mn 0.5, Cr 0.75, Ni 3.0. Specimens, 11 mm in diameter, were subjected to cold plastic deformation with 3- 65% reduction and carburizing at 925°C during 8 and 16 hours. The amount of C absorbed is calculated from the increase in weight; the grain size is determined by the secant method. The diffusion depth of C is determined by metallographical analysis. It was found that at a coarsening of the grains from ΣS = 41.5 to 28 mm^2/mm^3, the weight increased from 3.55 to 6.2 mg/cm^2. The amount of C absorbed depends much more upon the grain size than upon the duration of holding. It was established that the refining of austenite grains causes a decrease of both the surface diffusion and the depth of the layer with C absorbed. The C absorbed is mainly concentrated

Card 1/2

The effect of the grain size upon...

in the surface layers. A decrease in the diffusion depth with grain refining indicates the run of a volumetric process rather than of boundary diffusion. It is assumed that during the formation of interstitial solid solutions volumetric but not boundary diffusion takes place.

I. Levtonov

[Abstracter's note: Complete translation]

Card 2/2

SOV/126-6-5-8/43

AUTHORS: Kontorovich, I.Ye., and Mermel'shteyn, Yu.M.

TITLE: Influence of Grain Sizes on the Diffusion of Carbon in Iron (Vliyaniye velichiny zerna na diffuziyu ugleroda v zheleze)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 5, pp 812 - 818 (USSR)

ABSTRACT: A distinction is made between diffusion through grain boundaries and grain bodies, the former being faster in some cases than the latter. Thus, in such cases, diffusion of an element through a polycrystalline metal aggregate is faster than through a monocrystal of the same metal, this being mainly due to the distortion of the lattice in the boundary layers of polycrystalline metals (Refs 1, 2, 4). However, this does not apply to diffusion of various elements through brass (Refs 3, 5). By applying radioactive silver to brass (Ref 6), it was found that the depth of penetration of silver through the grain boundaries was greater than through the grain bodies, the activation energy of diffusion through the grain boundaries being estimated to be half that occurring through the grain body. Ni, Pd and brass

Cardl/6

Influence of Grain Sizes on the Diffusion of Carbon in Iron

diffuse into commercially pure iron preferentially through grain boundaries, but small quantities of Ti, V, Nb, Mo and B retard the diffusion of nickel along the grain boundaries (Refs 7,8). The diffusion of silver through low palladium Fe-Pd alloys is intercrystalline (Ref 7). Self-diffusion of lead is independent of grain size (Ref 9) but the diffusion rate of radioactive isotopes of lead through fine-grained lead is considerably greater than through coarse-grained. All these data refer to systems forming substantial solid solutions. For interstitial solid solutions, the diffusion conditions and the energetic state are different. Thus, it was found (Ref 11) that the depth of diffusion of nitrogen into fine-grained iron is less than into coarse-grained so that the grain boundaries retard diffusion. The influence of grain size on diffusion of carbon in iron was studied by carburisation. The change in diffusion rate in relation to the austenitic grain size, in which diffusion proceeds during carburisation, was established. The change in austenitic grain size under

 definite heating conditions can be found from the change

Influence of Grain Sizes on the Diffusion of Carbon in Iron

in the original ferritic grain size, as there is a fundamental relationship between the two. Cylindrical specimens of Armco iron, 15 mm long and 14 mm dia were compressed by 3, 5, 7, 9, 12, 15, 20, 30, 40, 50 and 65% in order to get various grain sizes. After deformation, one part of the specimens were annealed at 680 °C for five hours, after which the recrystallised as well as the unannealed specimens were weighed and carburised in solid media. In order to establish the effect of temperature on the grain size, one part of the deformed specimens were put into an iron tube which was sealed at both ends and placed into the carburisation pot. Thus, these specimens, whilst being heated under the same conditions of temperature, were isolated from the carburising mixture. Carburisation was carried out at 950 °C for various periods of time, after which the specimens were furnace-cooled to room temperature. They were then cleaned and re-weighed and the gain in weight per unit area was worked out. The depth of case and the grain size in various portions of the specimens were determined metallographically. The austenitic grain size

was obtained from the cementite network in the hypereutectoid case of the carburised specimens, using Saltykov's method, in which the grain surface area per unit volume is calculated. Results of weight increase of the specimens in relation to different conditions of carburisation are shown in Figure 1. The quantity of carbon absorbed per 1 cm^2 of surface area of the specimen increases with decrease of surface area of the grains per unit volume ($\sum S$) which is equivalent to a coarsening of the structure. There is a linear relationship between the quantity of carbon absorbed and $\sum S$. This also holds true for prolonged heating conditions, but the absolute quantity increases and the difference in gain in weight for the coarse and fine grain states is even greater. Specimens which underwent recrystallisation prior to carburisation gained in weight as the structure became coarser and the $\sum S$ decreased, but the quantity of carbon absorbed was less than for un-recrystallised specimens. Also the difference in weight gain of specimens of different grain size was less than for specimens carburised immediately after deformation. This indicates

Influence of Grain Size on the Diffusion of Carbon in Iron

that carbon absorption depends on grain size as well as on the energetic state of the grains. For specimens which did not undergo recrystallisation prior to carburisation, the depth of carbon diffusion increased with increase in grain size (see Figure 2). The carbon absorbed during carburisation is concentrated preferentially in the layer nearest to the surface (Figure 3). For specimens carburised after preliminary carburisation the depth of the diffusion layer also increases with increasing grain size (see Figure 4) but the depth of carbon diffusion during carburisation in recrystallised specimens is considerably less than in deformed specimens. Increase of soaking time causes an increase in the average case depth (see Figure 5). This is due to growth of austenitic grains which reduces the quantity of grain-boundary material and hence enables carbon to diffuse more deeply. As the grain size decreases so the amount and size of separated cementite increases. Hence a refinement of structure causes carbon to concentrate in the surface zones and opposes its diffusion in depth. As the grain size increases, the cementite separated

Influence of Grain Size on the Diffusion of Carbon in Iron

in the hyper-eutectoid layer becomes thinner and distributes itself preferentially along the pearlite grain boundaries. As the number of $\sum S$ per unit volume increases, the quantity of cementite increases, the quantity of pearlite decreases and islands of ferrite form. Such anomalies in micro-structure are shown in Figures 6, 7 and 8. There are 9 figures and 11 references, 4 of which are Soviet, 3 German and 4 English.

ASSOCIATION: Moskovskiy vecherniy metallurgicheskiy institut (Moscow Evening Metallurgical Institute)

SUBMITTED: March 5, 1957 (initially)
May 28, 1957 (after revision)

Card 6/6

BULGARIA

HARALAMBIEV, H., MERMERSKI, K., STOEV, I., SIMEONOV, S., YOTOV, M., Research Institute of Swine Diseases, Vratsa, Bulgaria

"An Investigation of the Immunogenicity of Alcohol-Inactivated Aujeszky Virus in Sheep"

Sofia, Doklady Bolgarskoy Akademii Nauk, Vol 19, No 5, 1966, pp 441-444

Abstract: [English article] There exist considerable differences of opinion among researchers concerning the immunologic properties of inactivated Aujeszky virus. Consequently, the absence of a sufficiently immunogenic vaccine with inactivated antigen in Bulgaria, as well as the hazards involved in the five existing vaccines, prompted the authors to investigate the immunogenicity of virus inactivated with ethyl alcohol. The paper presents a detailed description of the preparation procedures and of the test results obtained with sheep 1 to 3 years old. An analysis shows that 1) the Aujeszky virus cultivated in tissue cultures is fully inactivated by 15% ethyl alcohol for 10 hours at 30 °C; the virus thus inactivated is absolutely harmless to rabbits and sheep; 2) the inactivated virus preserves its immunogenicity; in the blood of the sheep vaccinated with it are found virus-neutralizing antibodies with a titre of 1:8 against 10^3 CPD_{50} virus; the immunized sheep successfully pass a provocation with 10^4 CPD_{50} virulent virus on the 20th day after vaccination; 3) an addition of 10% liquid paraffin to the virus inactivated in this manner intensifies its immunogenic effect and contributes

CHABERKO, Zbigniew, mgr inz.; MERMON, Andrzej, mgr inz.

Analysis of usefulness of constructing grate boilers in Poland with output of 64t/h, 110 atn, 540°C for inferior coal. Gosp paliw 11 no.3:87-89 Mr '63.

1. Katedra Kotlow i Silowni Parowych, Politechnika, Gliwice.

MERMON, WLODZIMIERZ

Mermon, Wlodzimierz. Zasady konstrukcji przyrzadow uchwytow i sprawdzianow specjalnych. Warszawa, Panstwowe Wydawn. Techniczne, 1950. (Construction principles of the holding devices in machine tools and in measuring instruments. Illus.)

SO: Monthly list of East European Accessions, LC, Vol. 3, No. 1, Jan. 1954, Uncl.

POL

3263 658.51 : 621.91.07 : 621.75

* Mermon W. The Planning of Machining Operations and Erection of Machine Tools.

„Planowanie obróbki skrawaniem i montażu". Warszawa, 1953, PWT, 16°, 183 pp., 283 figs., 27 tabs.

General principles of planning machining operations and erection of machine tools; influence of the class of production, machine tool stock, heat treatment, appliances and chucks upon the planning of machining procedure. Other problems connected with the planning of machining operations, including the determination of surplus allowed for machining operations, selection of stock and outlines for the machining of typical work.

HERMON, W.

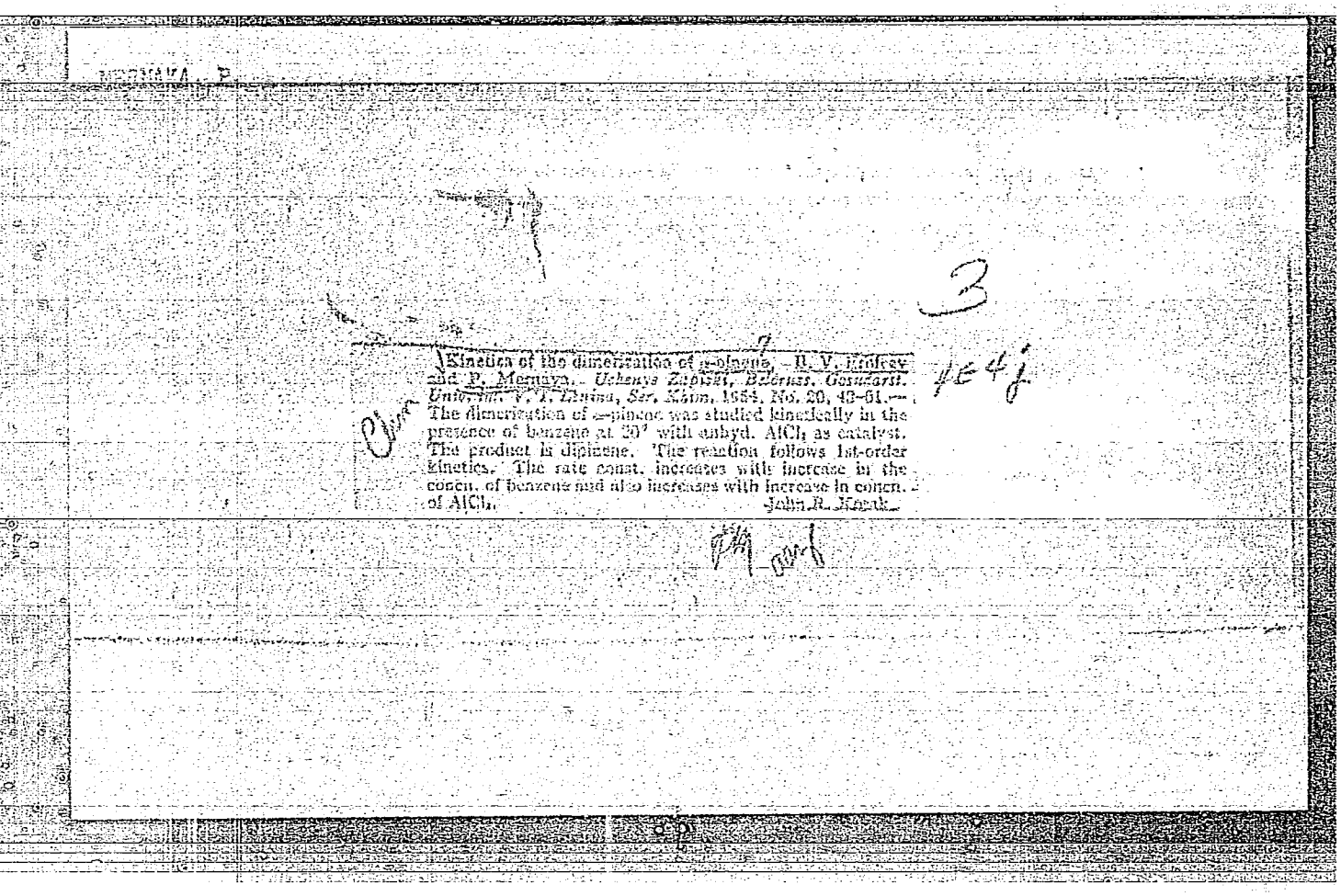
"Technology of lathing, milling and cutting machines." p. 18
(Mechanik, Vol 25 No 1 Jan 53 Warszawa)

SO: Monthly List of East European Accessions, Vol 2 No 9 Library of Congress Sept 53 Uncl

MERMON, W.

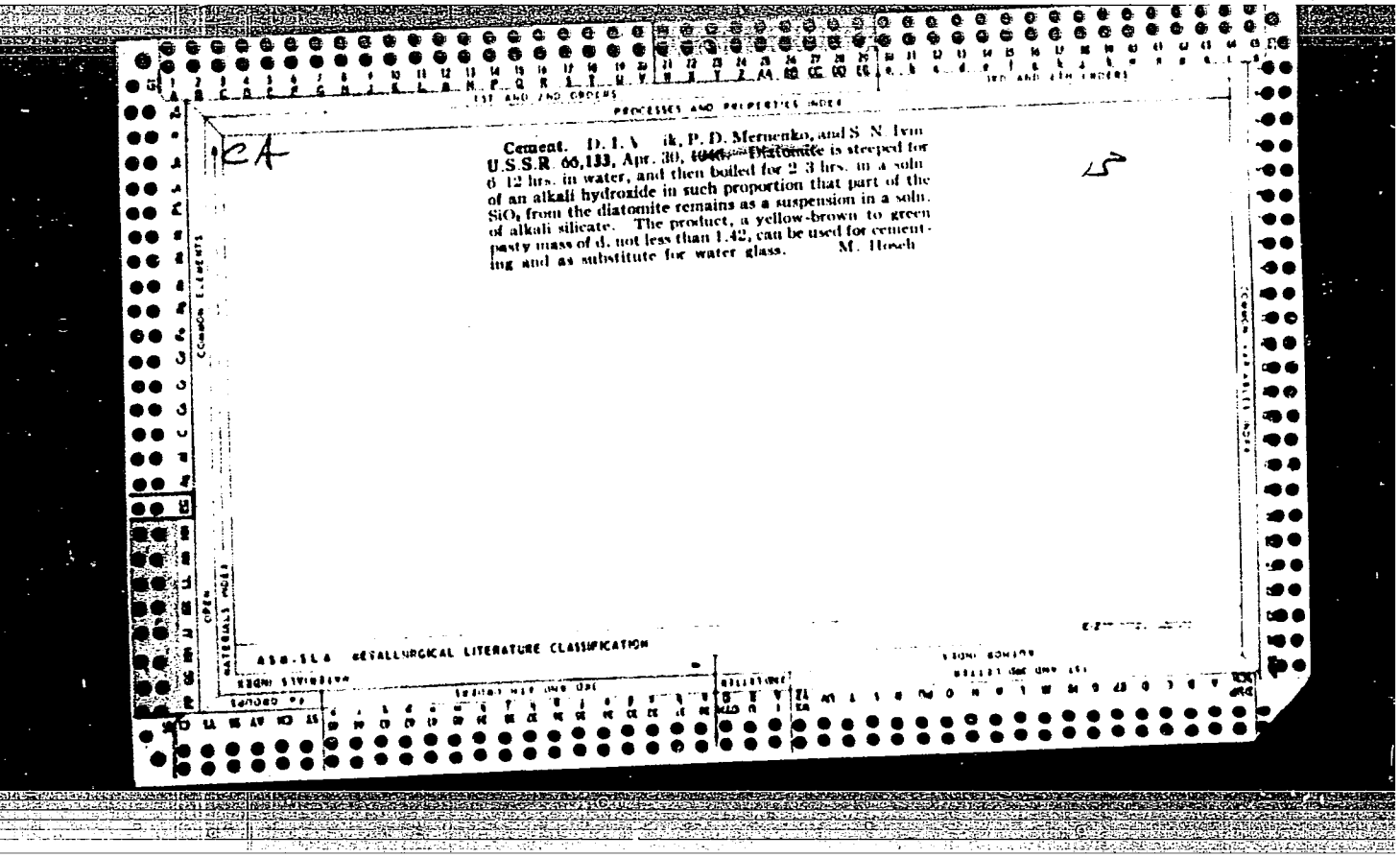
"Repair of grinders as a factor of economical management." p. 145.
(MECHANIK Vol. 27, No. 4, Apr. 1954. Warszawa, Poland)

SO: Monthly List of East European Accessions. (EEAL). LC. Vol. 4, No. 4, April 1955. Uncl.



Kinetics of the dimerization of α-pinene. — B. V. Ipatiev and P. Mamaev. *Uchenye Zapiski, Belorussk. Gosudarst. Univ. im. V. I. Lenina, Ser. Khim.* 1954, No. 20, 48–61.— The dimerization of α-pinene was studied kinetically in the presence of benzene at 20° with anhyd. $AlCl_3$ as catalyst. The product is dipinene. The reaction follows 1st-order kinetics. The rate const. increases with increase in the concn. of benzene and also increases with increase in concn. of $AlCl_3$.

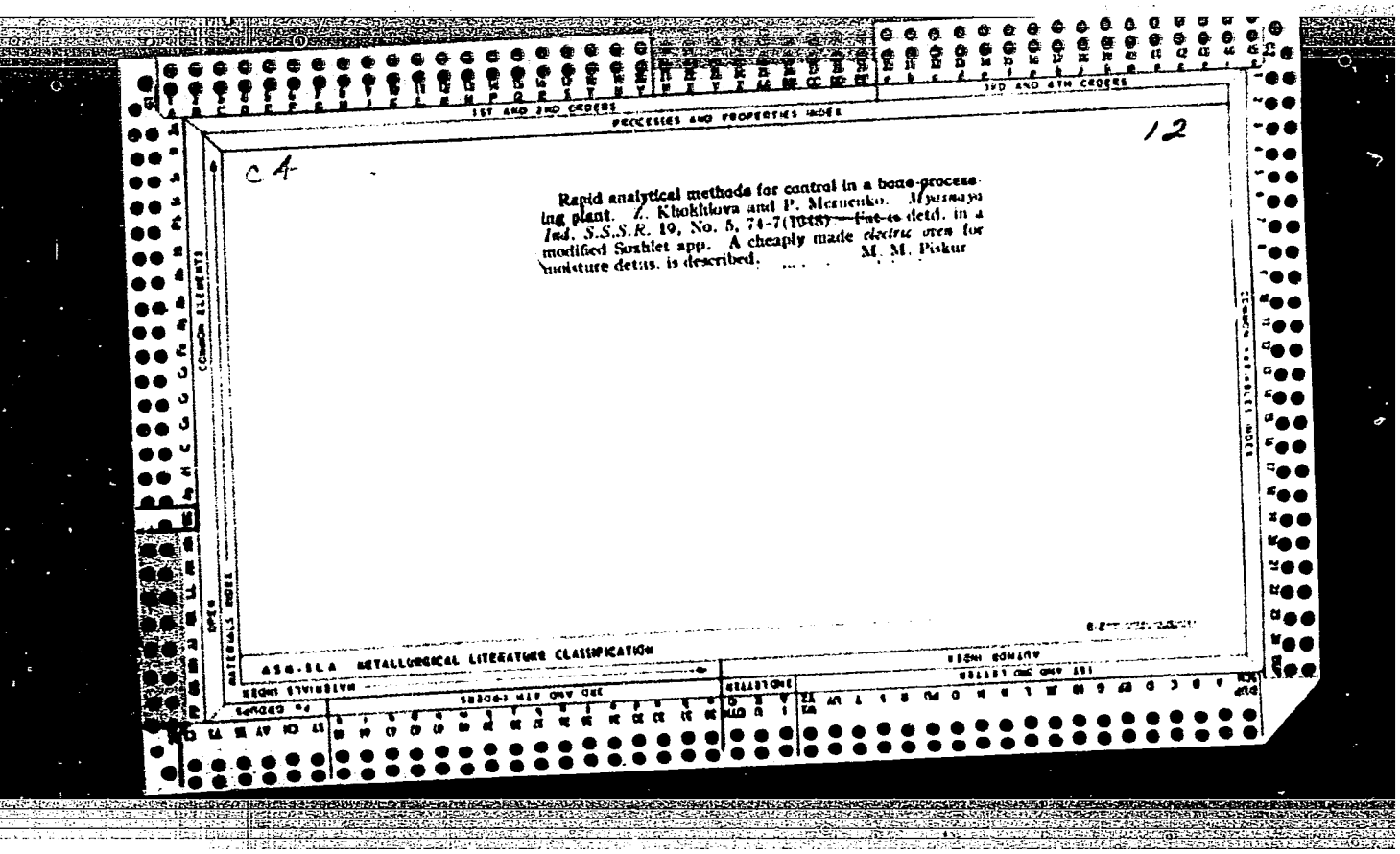
John R. Mauk



PROCESSES AND PROPERTIES INDEX

Cement. D. I. Vaĭk, P. D. Mernenko, and S. N. Ivin U.S.S.R. 66,133, Apr. 30, 1946. Diatomite is steeped for 6–12 hrs. in water, and then boiled for 2–3 hrs. in a soln. of an alkali hydroxide in such proportion that part of the SiO_2 from the diatomite remains as a suspension in a soln. of alkali silicate. The product, a yellow-brown to green pasty mass of d. not less than 1.42, can be used for cementing and as substitute for water glass. M. Hoeh

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



C4

12

Rapid analytical methods for control in a base-processing plant. Z. Khokhlova and P. Mezentsko. *Myasnaya Ind. S.S.S.R.* 19, No. 5, 74-7(1948).—The fat is detd. in a modified Soxhlet app. A cheaply made *electric* oven for moisture detns. is described. M. M. Piskur

MERNENKO, P.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
Leather and Glue

Improvement in the extraction of bones. Z. Khokhlova, L. Elmanova, S. Ivin, P. Mernenko, and V. Kalinina. *Myasnaya Ind. S.S.R.* 24, No. 5, 30-1(1953).—Degreasing of bones for glue or gelatin extn. is improved by a treatment with C_4H_6 vapor to dry and partially to ext. them. Extn. is completed by a soaking process. M. M. P.

BARANDYCH, T.V.; MERNENKO, P.D.

[Production of casein glue] Proizvodstvo kazeinovogo kleia. Moskva, Pishchepromizdat, 1953. 38 p. (MLRA 7:4)
(Glue) (Casein)

KHOKHLOVA, Z.; MERNENKO, P.

Improved process for bone-glue extraction. Myasnaya Ind. S.S.S.R. 24, No.2, 39-43 '53. (MLRA 6:4)
(CA 47 no.15:7806 '53)

MERNENKO, P.

3

USSR.

Obtaining high-viscosity components from glue solutions by means of fractionation. Z. Khokhlova and P. Mernenko. *Myasnaya Ind. S.S.S.R.* 25, No. 6, 30-1(1954). A glue (viscosity 2.00 poises) was dissolved to give a 45-8% soln. and was allowed to gel. This was successively treated with 3 parts of water at 5, 15, and 25°. The treatments dissolved glue fractions of viscosities 1.0009, 1.131, and 1.317 poises, resp., comprising 3.15, 7.57, and 13.5% of the original and the residue, 68.7%, had a viscosity of 3.457 poises.

M. M. Piskur

USSR/Chemical Technology - Chemical Products and Their Application. Leather. Fur. Gelatin. Tanning Agents. Technical Proteins, I-29

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 63795

Author: Khokhlova, Z. V., Mernenko, P. D.

Institution: None

Title: New Method for the Production of Technical Gelatin

Original Periodical: Tr. Vses. n.-i. in-ta myasn. prom-sti, 1955, No 7, 123-126

Abstract: Investigated was the possibility of preparing gelatin by the steam or autoclave method. This necessitates a maximum hydration of bone collagen and reduction of thermal treatment of bones during the first stage of diffusion. The bones are steeped in cold water for 24 hours, the water being changed every 4-6 hours, are then washed with a strong current of water in revolving drums to free them from admixtures and organic residues. Thereafter the bones are blown with steam and are steamed with saturated steam under a pressure of 2-5 atmospheres for 10-20 minutes. After each steaming and release of the steam the

Card 1/2

USSR/Chemical Technology - Chemical Products and Their Application. Leather. Fur. Gelatin. Tanning Agents. Technical Proteins, I-29

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 63795

Abstract: the diffuser is filled with water at 90-95°. Steeping is continued for 20-25 minutes after which the water is passed into broth-collectors and from these into vacuum-evaporators. Steaming and steeping of bones are effected 3 times in succession. Evaporation of gelatin broth is carried out to a concentration not exceeding 35% (calculated on the dry basis). Gelatinization is effected on casting tables. Thereafter the gelatin is cut and dried in 2 stages. The production of technical autoclave gelatin is more economical and ensures the output of a higher grade product.

Card 2/2

KHOKHLOVA, Z.V.; starshiy nauchnyy sotrudnik; MERNENKO, P.D., zaveduyushchiy laboratoriyey.

Manufacturing glue in small separate pieces. Trudy VNIIMP no.7: 127-135 '55. (MLRA 9:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut myasnoy promyshlennosti (for Khokhlova); 2. Zavod "Kleytuk" (for Mernenko).
(Glue)

KHOKHLOVA, Z., inzh.; MERNENKO, P., inzh.

Soaking bones before degumming. Mias. ind. SSSR 29 no.1:52-53 '58.
(MIRA 11:3)

1.Vsesoyuznyy nauchno-issledovatel'skiy institut myasnoy promyshlennosti (for Khokhlova). 2.Zavod "Kleytuk" (for Mernenko).
(Glue)

MERNICZEI, Mihaly

Myoblastmyoma. Orv. hetil. 100 no.3:126-127 18 Jan 59.

1. Az Orszagos Onkologiai Intezet Sebeszeti Osztalyanak (foorvos: prof. Huttl Tivadar dr.) kozlemenye.
(MYOBLASTOMA, case reports
granular cell (Hun))

MERNYEI, Janos (Sztalinvaros)

Workshop experiences with the use of the Roga test. Kem tud kozl MTA 16 no.1:124 '61.

1. Dunai Vasmu, Sztalinvaros, Hungary.

(C_{cal})

MERNYKH, V.M.

Miniature semiconductor inclinometer. Sbor.luch.rats.predl. pt. 2:53-55 '63. (MIRA 17:5)

1. Kabardino-Balkarskaya kompleksnaya geologicheskaya ekspeditsiya.

MERO, Endre; TISZAVOLGYI, Gyorgy; KOLTAI, Andras

Comparison of the results of labor ability tests with the actual physical performance in the occupational work. Munkavedelem 8 no.4/6:38-42 '62.

HUNGARY

SZERDAHELYI, Jozsef, MERO, Endre; National Institute for Labor Hygiene (Orszagos Munkaegeszsegugyi Intezet), Budapest.

"Determination of the Eosinophilic Leucocytes of the Blood with an Eosin-Oxalate-Propyleneglycol Dye Solution."

Budapest, Kiserletes Orvostudomany, Vol 15, No 2, Apr 63, pp 164-167.

Abstract: [Authors' Hungarian summary] The authors describe a chamber-counting procedure for the determination of the eosinophilic leucocytes of circulating blood. In this procedure, an eosin-oxalate-propyleneglycol dye solution destroys all other cellular elements of the blood, or renders them invisible, and the method makes it possible to carry out a rapid and accurate eosinophilic cell count even after a longer period elapsed since the taking of the blood sample. To test the reliability of the method, the authors compared results obtained at different times with their method, or by a counting method carried out on a blood smear, or the method of Szmuk. A statistical evaluation of the results showed that the eosinophilic cell count may be carried out reliably within four hours of taking the sample. Of 14 references, 2 are Hungarian, the rest is Western.

1/1

MERO, Jozsef, dr.

"Observations and exercises in geography teaching. Vol.1-2", ed. by Leona Kazar. Reviewed by Dr. Jozsef Mero. Foldr kozl 8 no.2:204-206 '60.

MERO, Jozsef,dr.,tanar

Dissemination of knowledge lectures at the workers' hostel on Dombovari Street. Munka 10 no.2:22 F '60.

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Professional circles in the Ikarusz cultural homes. Munka 10 no.5:21 My '60.

MERO, Jozsef, dr., tanar

Educational courses for construction workers. Munka 11 no.1:23 Ja '61.

(Hungary—Construction workers)
(Hungary—Education of adults)

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Notes. Munka 11 no.6:24-25 Je '61.

MERO, Jozsef, dr., tanar

Trade unions for the up-to-date methods for training skilled workers. Munka 12 no.9:22-23 S '62.

MERO, Jozsef, dr.

Among "old students" in the workshop school of workers. Munka 13 no.3:24-25 Mr '63.

MERO, M.; PRAKSIN, S.

Wheat in Albania. Zemledelie 7 no.4:89-92 Ap '59.
(MIRA 12:6)

(Albania--Wheat)

[illegible], M.

AGRICULTURE

PERIODICALS: P[illegible] S[illegible]ALISTA.

[illegible], M. The influence of supplementary fertilizing on the yield of wheat. p. 7.
Cotton growing from seedlings. p. 10.

Vol. 13, no. 3, Feb. 1959.

Monthly List of East European Accessions (EEAL) LC, Vol. [illegible], No. 5 May 1959, Unclass.

MERO, T.

Hungarian Technical Abst.
Vol. 5 No. 4 1953

76. **Basic paper materials for the manufacture of artificial leather.** – *A műbőrgyártás papíralapanyagai* – V. Mérő. (Paper and Printing – *Papír- és Nyomdatechnika* – Vol. 4, 1952, No. 12, pp. 24 – 26)

In the course of the historical development of the manufacture of artificial leather two trends have evolved, one of which endeavours to attain the structure and strength properties of leather while the other merely confines itself to the imitation of the appearance of the leather surface. Paper proved to be a suitable basic material for both cases. Among paperboards used in the first instance the manufacture of counterboards for shoemaking purposes is at present a problem of prime importance. By applying the newest technological methods in manufacturing a product has been turned out the mechanical and qualitative properties of which exceed the requirements of standard specifications. About 20% latex and 2 to 3% melamine resin, combined with paraffin, pine resin or bitumen, considerably increase the resistance of the counter against various stresses subsequent to water absorption. Both sized and unsized papers are used as basic paper materials for imitation leather. Their tensile strength may be increased by impregnating with latex. Production difficulties may arise from the selection of inadequate raw materials. *I. Vértes*

T. TERO

"Printing Papers." p. 117 (Papir Es Nyomdatechnika. Vol. 5, no. 4, Apr. 1953 Budapest.)

Vol. 2, no. 9

SO: Monthly List of East European Accessions./Library of Congress, Sept 1953, Uncl.

HUNGARY/Chemical Technology, Chemical Products and Their Application, Part 4. - Cellulose and Its Derivatives, Paper. H-33

Abs Jour: Referat. Zhurnal Khimiya, No 10, 1958, 34683.

Author : Tibor Mérö, Endre Szilágyi.
Inst : Not given.
Title : Present Problems of Paper Sizing.

Orig Pub: Papír és nyomdatechn., 1955, 7, No 8, 256-260.

Abstract: No abstract.

Card : 1/1

MERO, Tibor

Hungary's use of straw pulp. Geo. Varga, Tibor Mero, and Paul Lengyel (Hung. Paper Research Inst., Budapest). *World's Paper Trade Rev.* 145, 1137-8, 1140, 1148(1956); cf. *C.A.* 50, 608e.—Details are given of mill-scale expts. on the use of straw pulp, especially rice-straw pulp, in papermaking, and a comparison is made of straw pulp and wood-pulp fibers as revealed by electron-microscope studies.

Ralph K. Clarling

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MT

H-33

Country :

Category= : Chemical Technology. Chemical Products and Their Applications. -- Cellulose and Its Derivatives. 40937

Abs. Jour. : R. Zh. - Khim., No. 11, 1959

Author : Kobor, L., Lengyel, P., Meroe, T., and Morvay, S.

Institut. : Not given

Title : Straw as a Raw Material for the Production of Cellulose

Orig. Pub. : Papiripar, 2, No 4, 121-132 (1958)

Abstract : The following points must be kept in mind in the utilization of straw (S) as a raw material for the production of cellulose (C): The storage space requirements are 2.5-3 times greater than when wood (W) is used; S has a high surface area per unit weight (166 cm^2/gm as against 8 cm [sic]/gm for W); the fibers obtained from rice S have a surface area per unit weight of 3,200 cm^2/gm compared to 360 cm^2/gm for pine fibers; S contains natural dyes (chlorophyll, carotenes, xanthophylls and their derivatives). When straw C is processed in papermaking machines difficulties arise in the

Card: 1/2

H-176

COUNTRY : HUNGARY
CATEGORY : Chemical Technology. Chemical Products and Their Applications. Cellulose and Its *
ABS. JOUR. : RZKhim., No. 23 1959, No. 84350

AUTHOR : Vamos, G.; Mero, T.
INST. : -
TITLE : Testing of Paper Made of Fir and Straw Cellulose

ORIG. PUB. : Papiripar es magyar graf., 1959, 3, No 2, 41-50

ABSTRACT : No correlation between properties of mixtures and the percent content of fir and straw cellulose (C), ground to varying degrees, was obtained. From the mixtures of fir and straw C, paper with an optimum static and dynamic strength may be obtained. Paper made from a mixture containing 20% of straw C and 80% wood C had higher tearing strength, higher "double" bending resistance, superior ability to dehydration, greater whiteness and increa-

*Derivatives.Paper.

CARD: 1/2

GERSHKOVICH, Zh.[Herscovici, G.]; DUVALMA, M.; MEROIU, Ye.[Meroiu, E.]; SMORZHEVSKAYA, M.; VAYNBERG, M.; KORLETYANU, Ye.[Corleteanu, E.]

Preparation of isoprene from dimethyldioxane. Part 1: Role of a catalyst and of a carrier. Zhur. ob. khim. 32 no.12:3987-3990 D '62. (MIRA 16:1)

1. Khimicheskiy issledovatel'skiy institut, Bukharest.

(Isoprene) (Dioxane) (Catalysts)

GERSHKOVICH, Zh.[Herscovici, G.]; DUVAIMA, M.; [illegible], Ye.[Meroiu, E.]; SFINTSESKU, K.[Sfintescu, C.]; KORLETYANU, Ye.[Corleteanu, E.]; VAYNBERG, M.; SMORZHEVSKAYA, M.

Preparation of isoprene from dimethyldioxane. Part 3:Acidity and activity of a cracking catalyst. Zhur. ob. khim. 32 no.12: 3992-3997 D '62. (MIRA 16:1)

1. Khimicheskiy issledovatel'skiy institut, Bukharest.

(Isoprene) (Dioxane) (Catalysts)

MEROIU, Marin (Bukharest)

Track and its maintenance on the railroads of the Rumanian People's Republic. Zhel.dor.transp. 43 no.12:22-26 D '61. (MIRA 15:1)

1. Direktor Upravleniya soderzhaniya puti i sooruzheniy zheleznykh dorog Rumynskoy Narodnoy Respubliki.
(Rumania--Railroads--Track)

MERONER, Yu. M.

"Vertical Force Effects of an Ice Field on Hydraulic Engineering Structures," Meteorology and Hydrology, Issue No. 4, December 1950, Leningrad.

U-2020, 29 May 52

L 12721-63 EPR/EPF(c)/EWP(j)/EWT(m)/BDS ASD Pr-4/Ps-4/Pc-4 RM/WW

ACCESSION NR: AP3002295 S/0062/63/000/006/1114/1117

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AUTHOR: Yegorov, Yu. P.; Leytes, L. A.; Kravtsova, I. D.; Meronov, V. F.

TITLE: Effect of the nature of silyl and germyl groups on the Raman spectra of allyl silanes and allyl germanes

SOURCE: AN SSSR. Izv. Otdeleniye khimicheskikh nauk , no. 6, 1963, 1114-1117

TOPIC TAGS: Raman spectra, allyl silanes, allyl germanes, F, Cl, Br

ABSTRACT: The effect of the nature of the halogen in compounds of the formula X sub 3 M - CH sub 2 - CH = CH sub 2 where M is Si or Ge and X is F, Cl or Br, on the frequency and intensity of the Raman lines was investigated. Frequency increased with the series CH sub 3 is less than Br is less than Cl is less than F, and intensity increased in the series F is less than Cl is less than CH sub 3 is less than Br. The "barrier effect" concept of Si and Ge atoms in the investigated compounds is discussed. Orig. art. has: 2 figures and 2 tables.

ASSOCIATION: Institut organicheskoy khimii im N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry, Academy of Sciences, SSSR)

Card 1/2